

REMARKS

Applicant respectfully requests entry of the above Preliminary Amendment to place this U.S. Patent Application in better form for examination and prosecution before the U.S. Patent and Trademark Office.

The claims have been amended to eliminate multiple dependent claims and to more definitely and fully claim the subject matter of Applicant's invention. Applicant urges that the above Preliminary Amendment introduces no new matter into this U.S. Patent Application.

Applicant has also enclosed a Replacement Sheet of Fig. 3, showing the English language translated text in lieu of the German text.

Applicant sincerely believes that this U.S. Patent Application is now in condition for examination and prosecution before the U.S. Patent and Trademark Office.

Respectfully submitted,



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

JC17 Rec'd PCT/PTO 20 JUN 2005

Applicant: Johann ANDERL

Title: CONVEYING DEVICE FOR BAKED
GOODS

Based Upon: PCT/EP2003/013611

Express Mail No.: EV579066937US

Date of Deposit: 20 June 2005

Customer No.: 42419

TRANSMITTAL OF SUBSTITUTE SPECIFICATION

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant has enclosed a Substitute Specification attached to a red ink marked-up copy of the verified English language translation of PCT International Application PCT/EP2003/013611. The red ink identifies changes to the verified English language translation which are incorporated in the Substitute Specification.

The Substitute Specification includes general revisions to correct idiomatic translational errors and to provide proper headings. The undersigned states that the Substitute Specification contains no new matter.

Applicant sincerely believes that this Patent Application is now in condition for prosecution before the U.S. Patent and Trademark Office.

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device goods
Conveying [apparatus] for baking [products] JC17 Rec'd PCT/PTO 20 JUN 2005
10/539717

BACKGROUND OF THE INVENTION
Field of the Invention

This invention relates to a conveying apparatus for baking products, where a conveying unit, which is connected to a heating device, is connected at [the] one side to a supplying apparatus and at the other side to a removal apparatus.

Discussion of Related Art

[These types of] Known conveying apparatuses for baking products are in the form, for example, of conveyor belts.

SUMMARY OF THE INVENTION

It is [the] object of [the] invention to [configure] a conveying apparatus of the [aforementioned] type for [the] conveying of baking products [in such a manner] that the design is compact and simple and produces reliable conveying.

a conveying apparatus as discussed in this specification and in the claims
This object is achieved with [the] measures in claim 1. [It is accordingly provided here that the] conveying unit [includes] a helical face that can be set to vibrate by [means of] an oscillating drive for [the] conveying [of] the baking products upwards, wherein the supplying apparatus is connected in the lower region of the conveying unit and the removal apparatus is connected in the upper region of the conveying unit.

[Advantageous developments are specified in the sub claims.] The inclination of the helical face, in this case, can easily be selected in a suitable manner in order to obtain the desired conveying speed using the oscillating drive. The vibrations generated by the oscillating drive for the conveying can also be adapted in form and intensity to the desired conveying speed and also to the type of baking product.

In one embodiment of this invention, a

[An advantageous development, in this case, is that the] hollow, more especially cylindrical central section is included in a recirculating air heating circuit which is conducted over the helical face, wherein the hot air is conducted downwards over the spirals and in the hollow central section flows upwards in order to heat [up] the baking products in the desired manner. *the hot air*

In another embodiment,

[Another advantageous development is that] the helical face includes some steps, for example one after each 400°, wherein the steps are configured [in such a manner] that the baking products are turned when they exceed the step.

In one embodiment

[An advantageous development of the conveying unit] consists in that the oscillating drive includes two out-of-balance drive units, the force vectors of which are aligned, inclined to the vertical and inclined to each other. This design of the oscillating drive produces a relatively high degree of efficiency in a small model. In this case, relatively low frequencies and resultant low acceleration can be selected, the drive [thereby operating] in a relatively quiet manner.

and thus

it can operate

If [it is provided that] the removal apparatus is disposed above the supplying apparatus on the same side of the conveyor unit, the arrangement is favourable [advantageous] for operation when loading and unloading and the possibilities for the positioning of the apparatus are [favourable] favorable

favored if

The functioning and operating are [additionally favoured in that] the supplying apparatus includes a supplying section, which is connected to the conveying unit and [is provided with] a singling-out function, and a loading unit, which leads downwards to [said] supplying section and is set at an incline or is adjustable at an incline relative to [said] supplying section.

Additionally advantageous to the functioning [is the fact that] for [the] supplying [of] the baking products, the supplying section and the loading unit are drivable by [means of] one common supplying drive or by [means of] separate supplying drives. Using these measures, the cold, uncooked baking products, which are often still frozen, are [reliably] conveyed [in a reliable manner] from the loading unit to the supplying section and from [there] into the conveying unit.

the supplying section

If it is provided that the supplying apparatus includes an individual loading section, which is connected to the supplying section, baking products can be introduced into a baking sequence according to the [wishes] of the user.

demands

Advantageous to the functioning and operating of the apparatus are additionally the measures whereby the removal apparatus includes a removal section, which is connected to the upper end region of the helical face, and an output section, which leads inclinedly downwards to a removal apparatus.

In one embodiment

[A development] that is advantageous to the operation of the apparatus, consists, in addition, in that the heat of the baking products situated in the removal apparatus is conducted in part to the baking products situated in the supplying apparatus.

BRIEF DESCRIPTION OF THE DRAWINGS

[The invention is described in more detail below by way of exemplified embodiments with reference to the drawings. In which:

1C

Figures 1A to [1D] respectively

show a front view, side view from the left and top view of an upper level of a first [exemplified] embodiment of a conveying apparatus for baking products with a removal apparatus, and a top view of the same of a lower level with a supplying apparatus;

Figure 2

shows a front view, side view from the left and a top view of another [exemplified] embodiment of the conveying apparatus; and

Figure 3

shows

as shown

[is] a cutout from a conveying unit in Figures 1A to 1D and 2.

DESCRIPTION OF PREFERRED EMBODIMENTS

Figures 1A to 1D show four different views of a conveying device, [that is to say] respectively including a front view, a view from one supplying side [and two views from above, wherein Figure 1C shows a top view of a lower supplying level, and Figure 1D shows an upper removal level. The baking products are supplied by a supplying

a top view of

apparatus 2 in the form of uncooked products into a chamber 1.6 in the conveying unit 1, said chamber 1.6 being disposed in the lower region of a conveying unit 1, and from this chamber [they] are conducted further via another chamber 3.4 in the upper region, for example on the same side (Figures 1A to 1D) or on the oppositely situated side (Figure 2) with [reference] respect to the supplying apparatus 2, to be removed via a removal apparatus 3.

The conveying unit 1 includes a helical face 1.2, which is wound about a hollow cylindrical central section 1.3 and, as [can be seen] ^{shown} in Figure 3, has a plurality of turning steps 1.5. An oscillating drive 1.1 is disposed in the lower region of the conveying unit underneath the helical face 1.2 in order to make the helical face carry out vibration movements that convey the baking products upwards. The oscillating drive 1.1, in this case, has, for example, two drive units, which include imbalances rotating about a respective axis, wherein the vectors of the power components generated by the imbalances are aligned [inclined] ^{inclined} one to another and, for example, at the same angle relative to the vertical in order to effect the desired forward [conveying] ^{conveyance} over the helical face 1.2. Magnetic vibrators would also be conceivable. [By means of] With the coordination of the steps with the characteristics of the baking products, with the vibratory movements and with the inclination of the helical face 1.2, the baking products are turned when passing over the steps and are again conveyed in the desired position until the next step where they are turned. [once again.] A plurality of steps, for example between two and ten steps or where desired even fewer, can be provided per revolution about, for example, 400° of the helical face 1.2.

The conveying unit 1 is also used for heating-up the baking products, wherein the hot air is conducted downwards by a heating apparatus 4, which is situated for example up above, in a recirculating air heating circuit 1.4 over the helical face 1.2 and is then conducted through the interior of the central section 1.3 back upwards.

As [can also be seen] ^{shown} in Figures 1A to 1D, the supplying apparatus 2 includes various supplying sections, [that-is-to-say] one supplying section 2.3 which is including

connected to the inlet chamber 1.6, to which supplying section 2.3 uncooked baking products can be supplied from a loading unit 2.4 and/or from an individual loading section 2.1 for example via a turning section 2.2 which is connected thereto. The individual loading section 2.1, in this case, is disposed, for example, on a rear side of the conveying apparatus oppositely situated to a removal apparatus 3.3 for the finished baking products and it enables, according to the wishes of an operator or a customer, various baking products to be locked into a baking process according to type and number.

The loading unit 2.4 is, for example, configured in the form of a pivotable supplying container, which, for loading purposes is pivotable into a horizontal position and for supplying the filled-in uncooked baking products is pivotable into a position inclined relative to the supplying section 2.3. The supplying of the uncooked baking products out of the loading unit 2.4 to the supplying section 2.3 is effected by means of gravity via the inclination and additionally by means of vibration, such that, as a rule, cold, uncooked baking products, which are still frozen, are conveyed to the supplying section 2.3 securely and already singled-out to a certain degree and then, with further singling-out by means of chicanes (deflectors), are conveyed from the supplying section 2.3 to the conveying unit 1. The supplying section 2 also has, in an advantageous manner, an oscillating drive, a magnetic vibrating means being suitable for this at this point. The supplying from the individual loading section 2.1 via the turning section 2.2 can be effected in a corresponding manner using an oscillating drive or, for example, by means of a circulating belt. A circulating conveyor belt is also conceivable as an alternative for the supplying section 2.3.

The removal apparatus 3, which is disposed above the supplying apparatus 2, includes a removal section 3.1, which, for example, can also be provided with an oscillating drive or with a circulating conveyor belt. An output section 3.2, which descends inclinedly forwards and terminates in the removal apparatus 3.3, is connected to the removal section 3.1, for example, over the overall length of the same in the design shown, which corresponds to the width of the overall removal apparatus 3 and also the supplying apparatus 2. At the removal

apparatus 3.3, a customer, for example, can remove finished baking products by [means of] a suitable [connected] container [connected thereto]. The removal section 3.1 can [be provided with] a singling-out apparatus, which is coupled to sensors, so [such] that different baking products can be sorted out and supplied to associated removal places [Figures] 1A [1], as shown in Figure

Through the disposition of the removal apparatus 3 above the supplying apparatus 2, the heat of the baking products [more especially] situated on the output section 3.2 can be used to heat up the uncooked baking products situated in the loading unit 2.4.

In the [case of the exemplified] embodiment shown in Figure 2, the supplying apparatus 2 and the removal apparatus 3 are disposed on two oppositely situated sides of the conveying unit 1. For the remainder, the design can be carried out in a similar manner to the [exemplified] embodiment in Figures 1A to 1D.

shown

[Translation of Figures]

[Figure 3]

[German

English]

[Transportstrecke abgewickelt

Unwound conveying section]